Project Introduction

During Phase I, our effort will focus on three software tools; CurveMesh, Geode and SLUGS. These tools will be developed in anticipation of use in the commercial mesh generation software Pointwise and consideration will be given to requirements for parallel implementation in a distributed computing environment. A new initialization procedure will be implemented in CurveMesh to provide more robust starting perturbation field prior to the optimization based smoothing scheme placing points in final position for optimal cell quality of the curved mesh. Access to the geometry kernel, Geode, will be provided through an API for operations required for mesh curving and mesh adaptation. Communication protocols will be developed to permit flow solver to prescribe mesh sizing information to mesh generation programs for h-p adaption. And discrete surface tessellation will be process using SLUGS to create smooth splined surfaces.

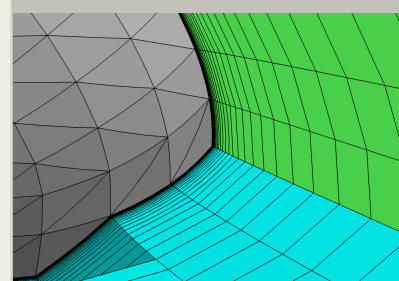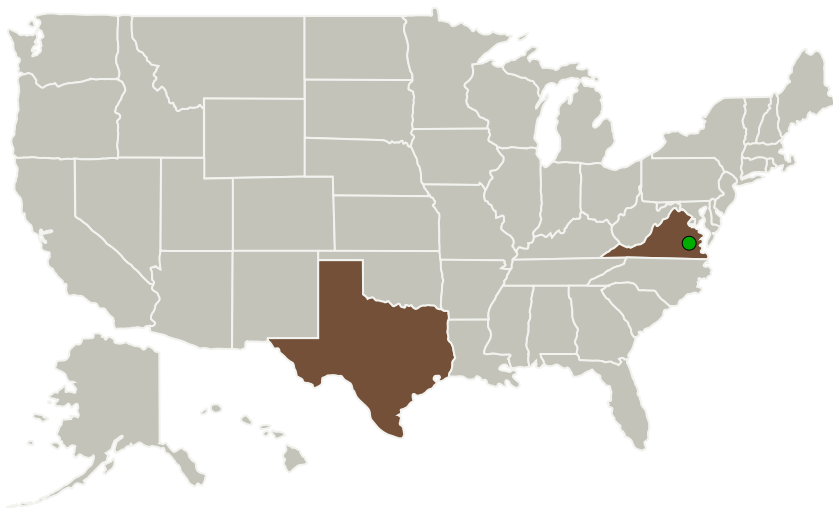## Primary U.S. Work Locations and Key Partners

High Order Mesh Curving and Geometry Access, Phase I Briefing Chart Image

Table of Contents

Organizations Performing Work	Role	Type	Location
Pointwise, Inc.	Lead Organization	Industry	Fort Worth, Texas
🟢 Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Tech Port

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Primary U.S. Work Locations	
Texas	Virginia

Images
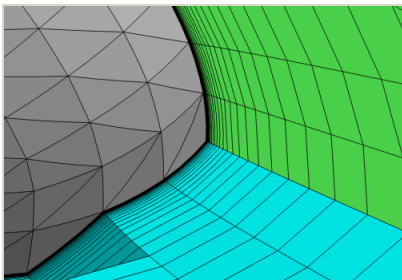
Briefing Chart Image
High Order Mesh Curving and Geometry Access, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/134875)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Pointwise, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

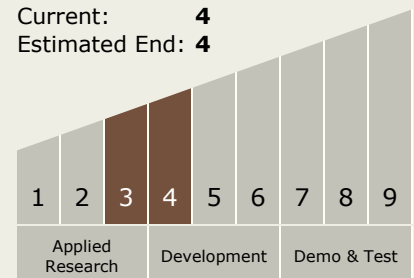**Program Manager:**
Carlos Torrez

Principal Investigator:
Steve Karman

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**

1	2	3	4	5	6	7	8	9
Applied Research			Development			Demo & Test		

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  └ TX09.3 Landing
    └ TX09.3.1 Touchdown Systems